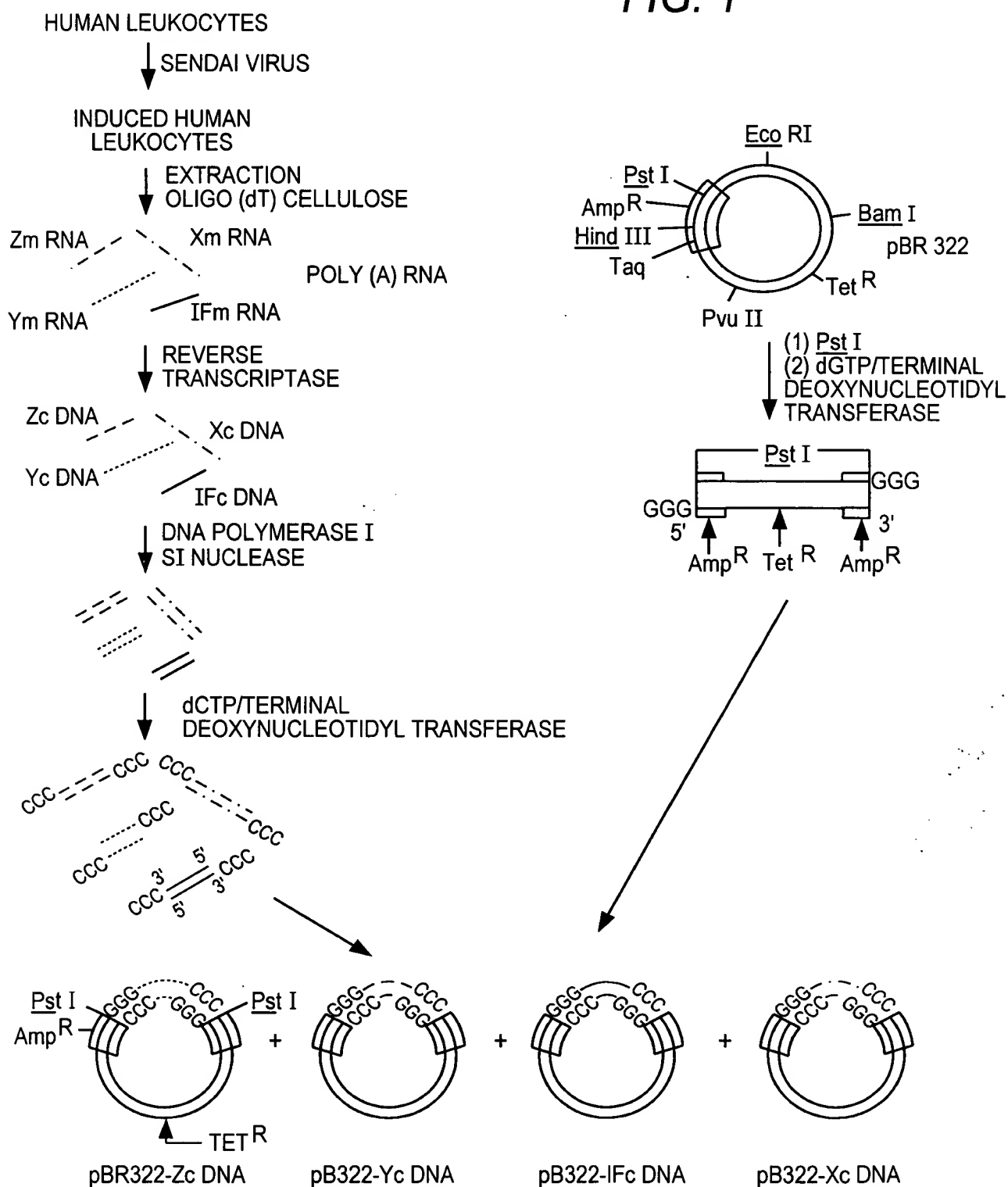




FIG. 1





2/31

FIG. 2

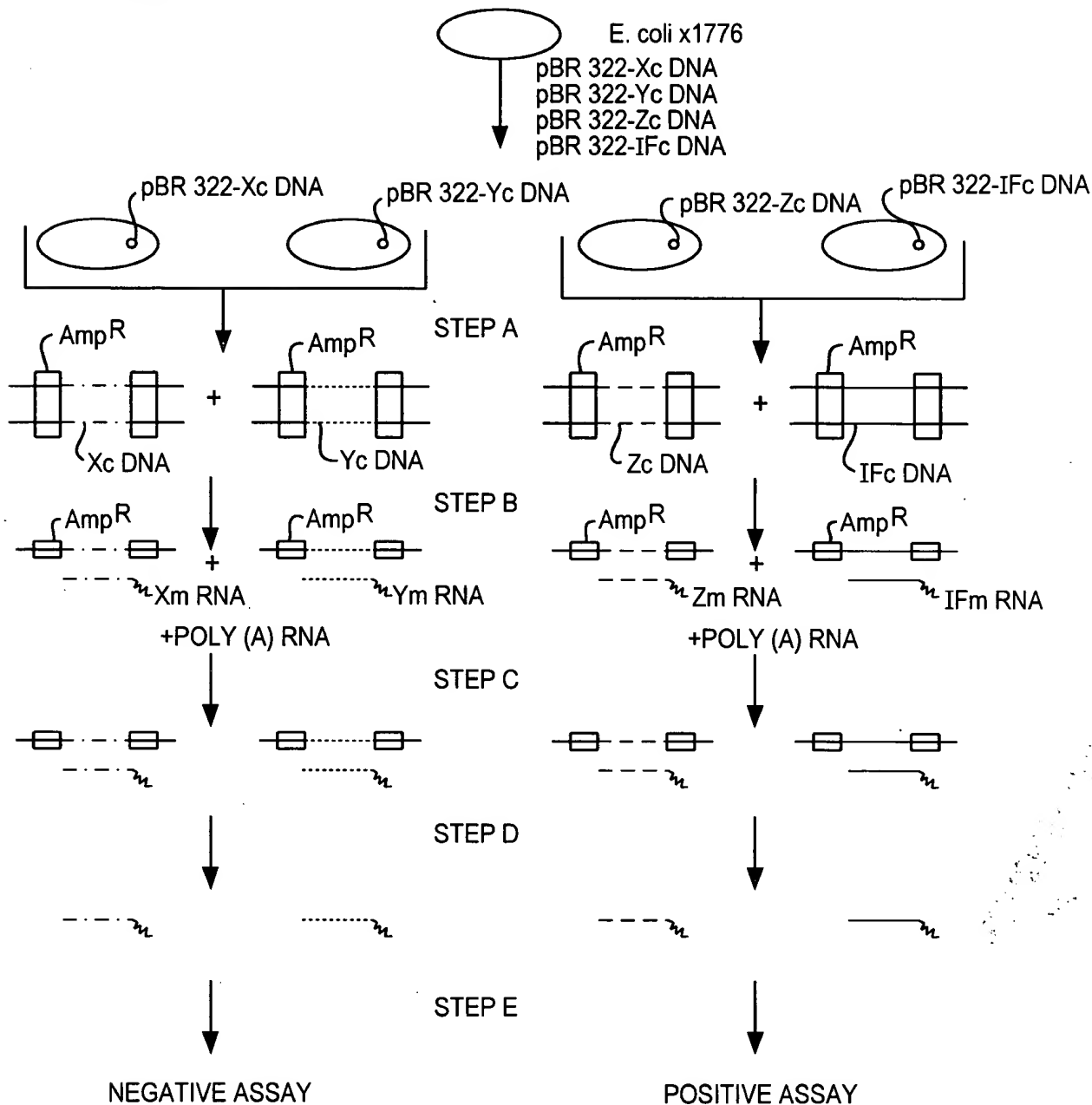




FIG. 3a

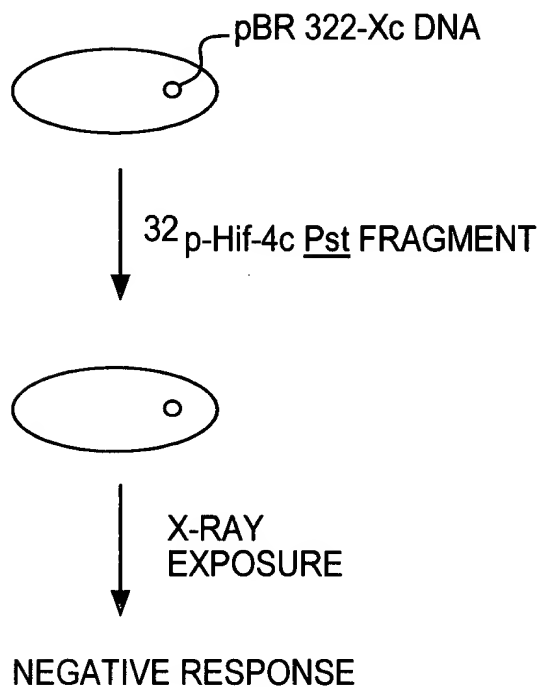


FIG. 3b

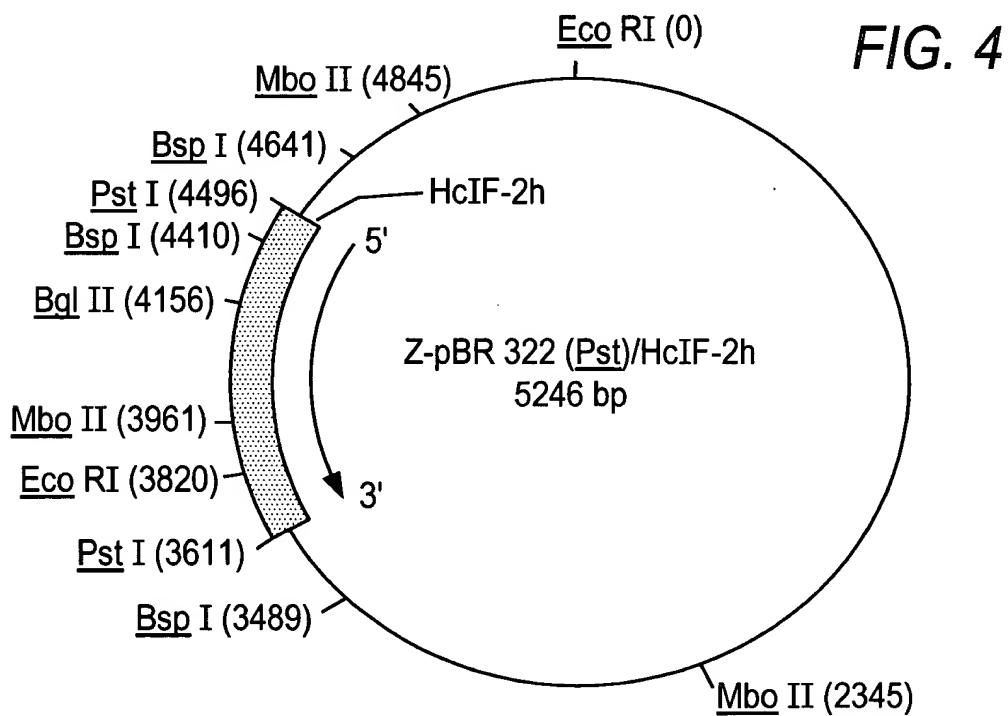
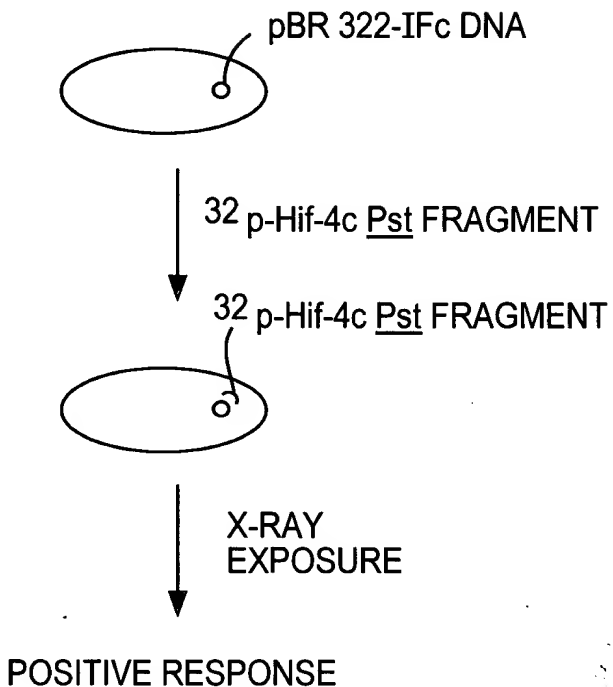




FIG. 5a

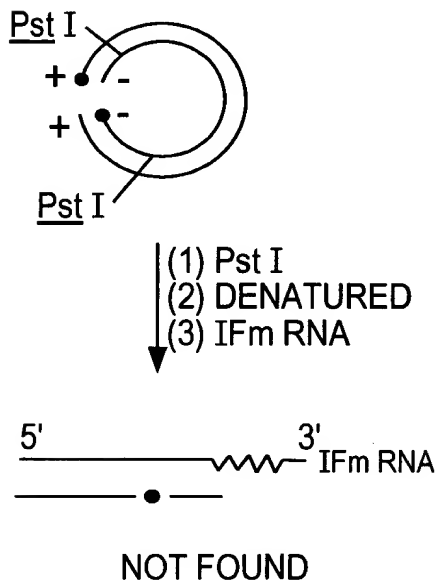
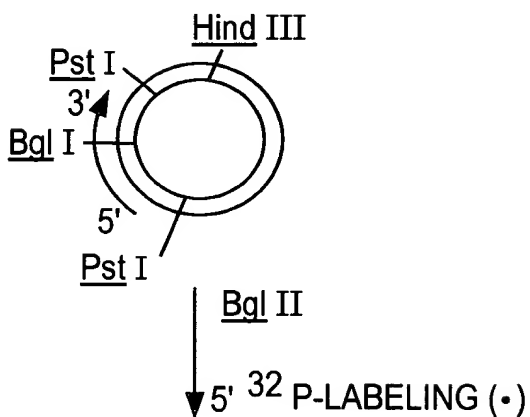
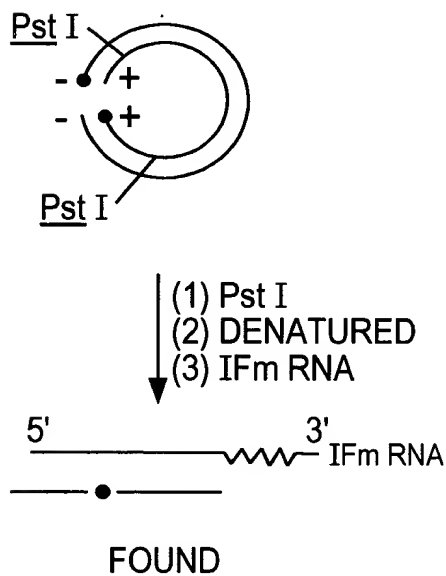
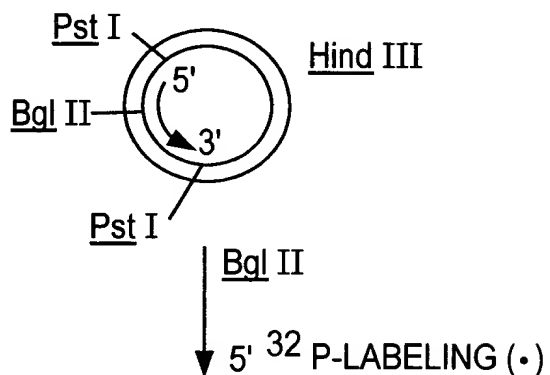


FIG. 5b





5/31

10 20
MetSerIleGlnHisPheArgValAlaLeuIleProPhePheAlaAlaPheCysLeuProValPheAlaHisProGluThr
pBR322 ATGAGTATTCAACATTTCCGTGTGCGCCCTTATTCCTTTTTTGGCGCATTTTGGCTCCTGTTTTTGCTCACCCAGAAACG

29 181
LeuVal ... ProAlaAlaMet
CTGGTG ... CCIGCAGCAATG ...
Pst

24
MetSerIleGlnHisPheArgValAlaLeuIleProPhePheAlaAlaPheCysLeuProValPheAlaHisArgCysSerAsn ...
pKT279 ATGAGTATTCAACATTTCCGTGTGCGCCCTTATTCCTTTTTTGGCGCATTTTGGCTCCTGTTTTTGCTCACCCGCTGCAGCAATG ...
Pst

25
MetSerIleGlnHisPheArgValAlaLeuIleProPhePheAlaAlaPheCysLeuProValPheAlaHisProLeuGlnGln ...
pKT280 ATGAGTATTCAACATTTCCGTGTGCGCCCTTATTCCTTTTTTGGCGCATTTTGGCTCCTGTTTTTGCTCACCCGCTGCAGCAATG ...
Pst

27
MetSerIleGlnHisPheArgValAlaLeuIleProPhePheAlaAlaPheCysLeuProValPheAlaHisProGluThr ...
pKT287 ATGAGTATTCAACATTTCCGTGTGCGCCCTTATTCCTTTTTTGGCGCATTTTGGCTCCTGTTTTTGCTCACCCAGAAACG

AlaAlaAlaMet
GCTGCAGCAATG ...
Pst

FIG. 6



6/31

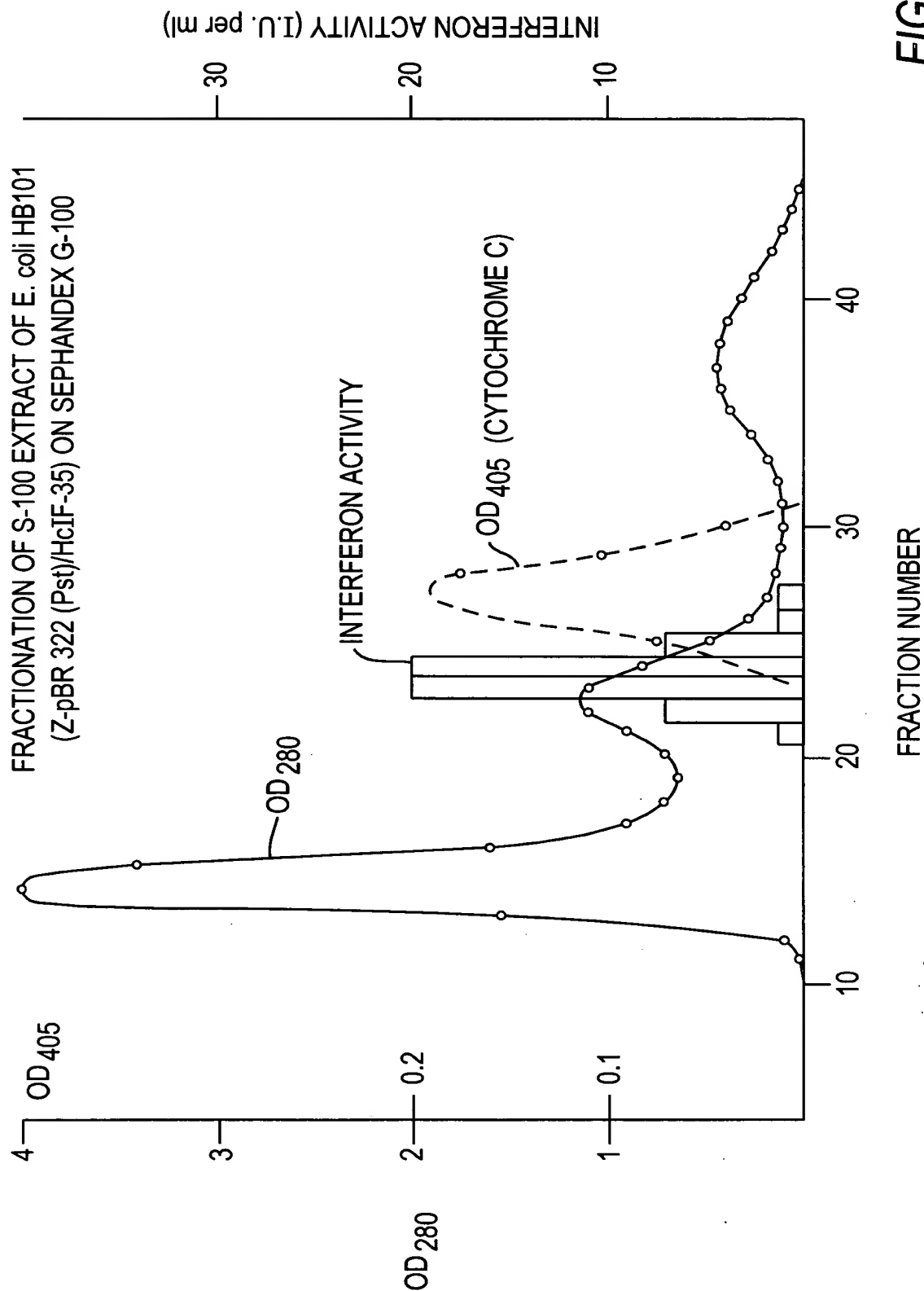


FIG. 7

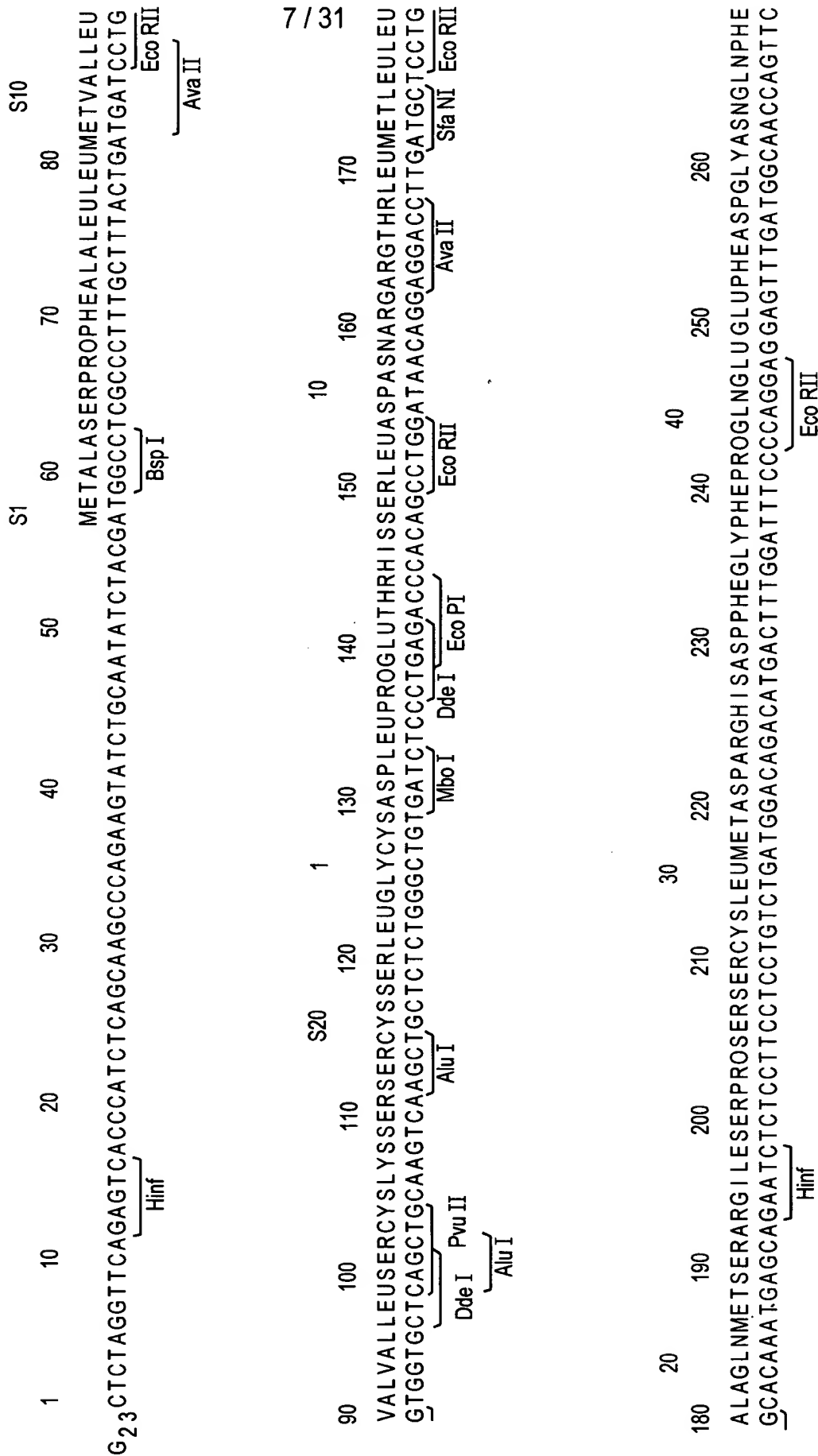


FIG. 8



8/31

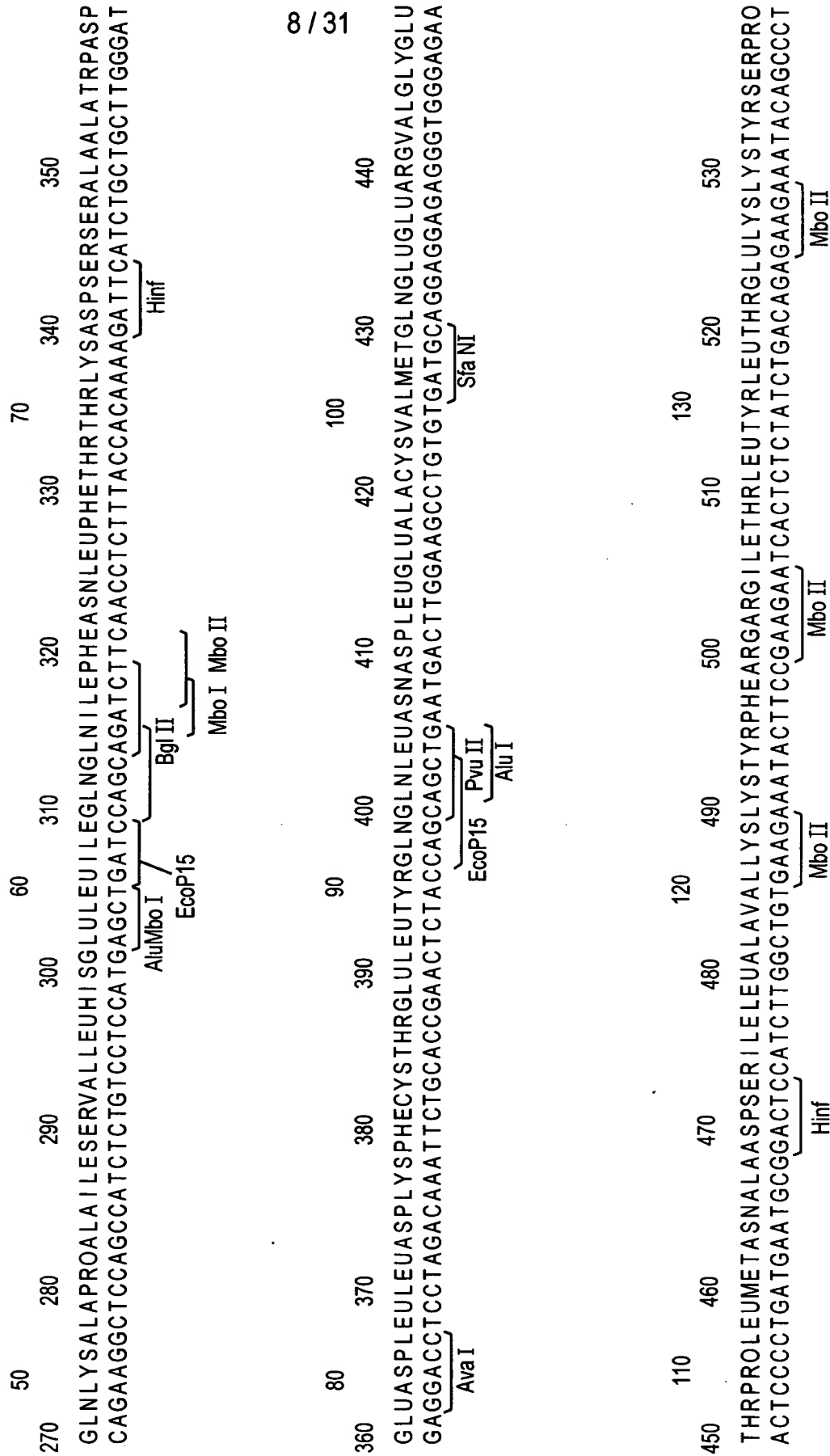


FIG. 9



9/31

140 150 160 166
540 550 560 570 580 590 600 610 620
CYSALATRPGLUVALARGALAGLUILEMETARGSERLEUSERLEUSERTHRASNLEUGLNUARGLEUARGARGLYSGLU
TGTGCCTGGGAGGTGTCAGAGCAGAAATCATGAGATCCCTCTCTTTATCAACAACTTGCAAGAAAGATTAGGAGGAAGGAATAACAT
EcoRII MboII

630 640 650 660 670 680 690 700 710
CTGGTCCAACATGAAACAAATTCTTATTGACTCATACACCCAGGTCACGCTTTTCATGAAATTCCTGTGCTATTTCAAAGACTCTCACCCCTGCTA
AvaII Hinf EcoRII EcoRI Hinf Hph

720 730 740 750 760 770 780 790 800
TAACTATGACCATGCTGATAAACTGATTTATCTATTTAAATATTTTAACTATTCATAAGATTTAAATTTTGTTCATATAACGT

810 820 830 840 850 860 865
CATGTGCACCTTTACACTGTGGTTAGTGTAATAAAACATGTTCCCTTATATTACTCAAAAAAAC₁₅
AccI

FIG. 10



10/31

FIG. 11A

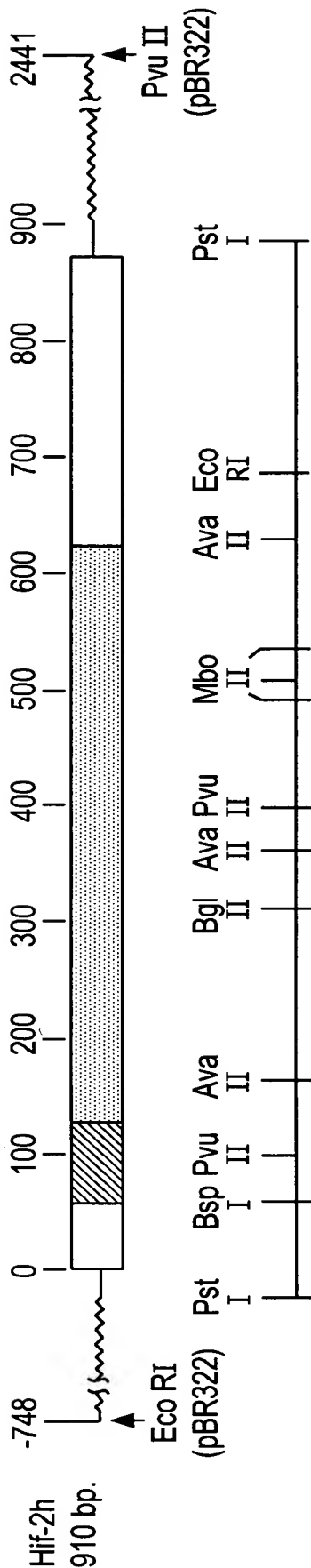
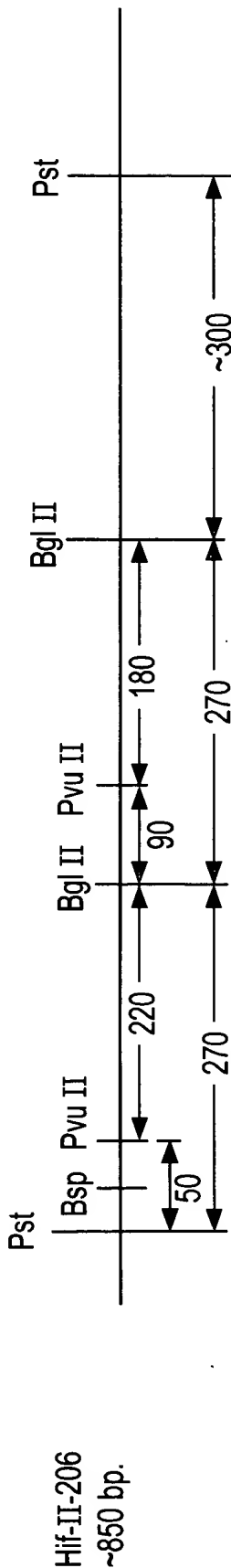


FIG. 11B





206(II)

-50 -40
G₁₃.TTACTGGTGGCCCTC.
leu leu val ala leu

-20

met ala ser pro phe ala leu leu met val leu
G₂₃CTCTAGGTTACAGTCACCCCATCTCAGCAAGCCCAAGATCTGCAATATCTACGATGGCCCTTGGCCCTTTACTGATGGTCCTG.
-120 -110 -100 -90 -80 -70 -60 -50 -40

206(II)

CTGGTGCTCAGCTGCAAGTCAAGCTGCTCTGTGGGCTGTGATCTGCTCAAAACCCACAGCCCTGGGTAGCAGGAGGACCTTGATGCTCCTG.
leu val leu ser cys lys ser cys ser val gly cys asp leu pro gln thr his ser leu gly ser arg arg thr leu met leu leu
-30 -20 -10 -1 10 20 30 40 50

10

-1 1

-10

val val leu ser cys lys ser cys ser leu gly cys asp leu pro glu thr his ser leu asp asn arg arg thr leu met leu leu
GTGGTGCTCAGCTGCAAGTCAAGCTGCTCTGTGGGCTGTGATCTCCTGAGACCCACAGCCCTGGATAACAGGAGGACCTTGATGCTCCTG.
-30 -20 -10 1 10 20 30 40 50

FIG. 12



12 / 31

206(II) GCACAGATGAGGAGATCTCTCTTTCTCTCGCTTGAAGACAGACATGACCTTTGGATTTCCTCCAGGAGGAGTTT---GGCAACCAGTTTC. 140
ALA GLN MET ARG ARG ILE SER LEU PHE SER CYS LEU LYS ASP ARG HIS ASP PHE GLY PHE PRO GLN GLU GLU PHE - GLY ASN GLN PHE 130
20 30 40

2h(I) ALA GLN MET SER ARG ILE SER PRO SER SER CYS LEU MET ASP ARG HIS ASP PHE GLY PHE PRO GLN GLU GLU PHE ASP GLY ASN GLN PHE 140
GCACAAATGAGCAGAAATCTCTCTCTCTCTCTGCTGATGGACAGACATGACCTTTGGATTTCCTCCAGGAGGAGTTTGTATGGCAACCAGTTTC. 130
60 70 80 90 100 110 120 130 140

206(II) CAAAGGCTGAAACCATCCCTGTCCCTCCATGAGATGATCCAGCAGATCTTCAA TCTCTTCAGCACAAGGAGCTCATCTGCTGCTTGGGAT. 230
GLN LYS ALA GLU THR ILE PRO VAL LEU HIS GLU MET ILE GLN GLN ILE PHE ASN LEU PHE SER THR LYS ASP SER SER ALA ALA TRP ASP 220
50 60 70

2h(I) GLN LYS ALA PRO ALA ILE SER VAL LEU HIS GLU LEU ILE GLN GLN ILE PHE ASN LEU PHE THR THR LYS ASP SER SER ALA ALA TRP ASP 230
CAGAAAGGCTCCAGGCATCTCTGTCTCCATGAGCTGATCCAGCAGATCTTCAACCTCTTTACCCACAAGAGATTCACTCTGCTGCTTGGGAT. 220
150 160 170 180 190 200 210 220 230

FIG. 13



13/31

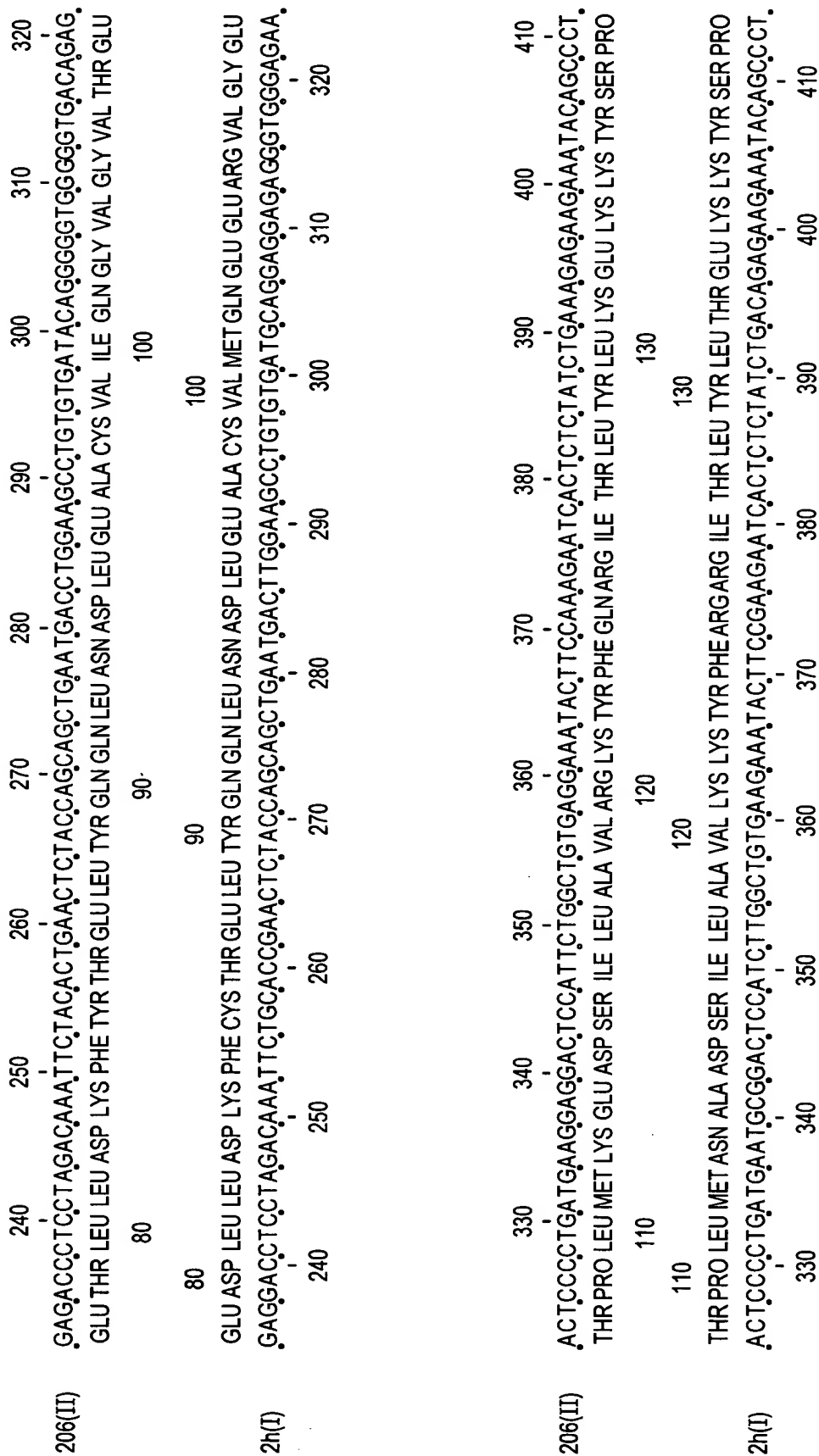


FIG. 14



14/31

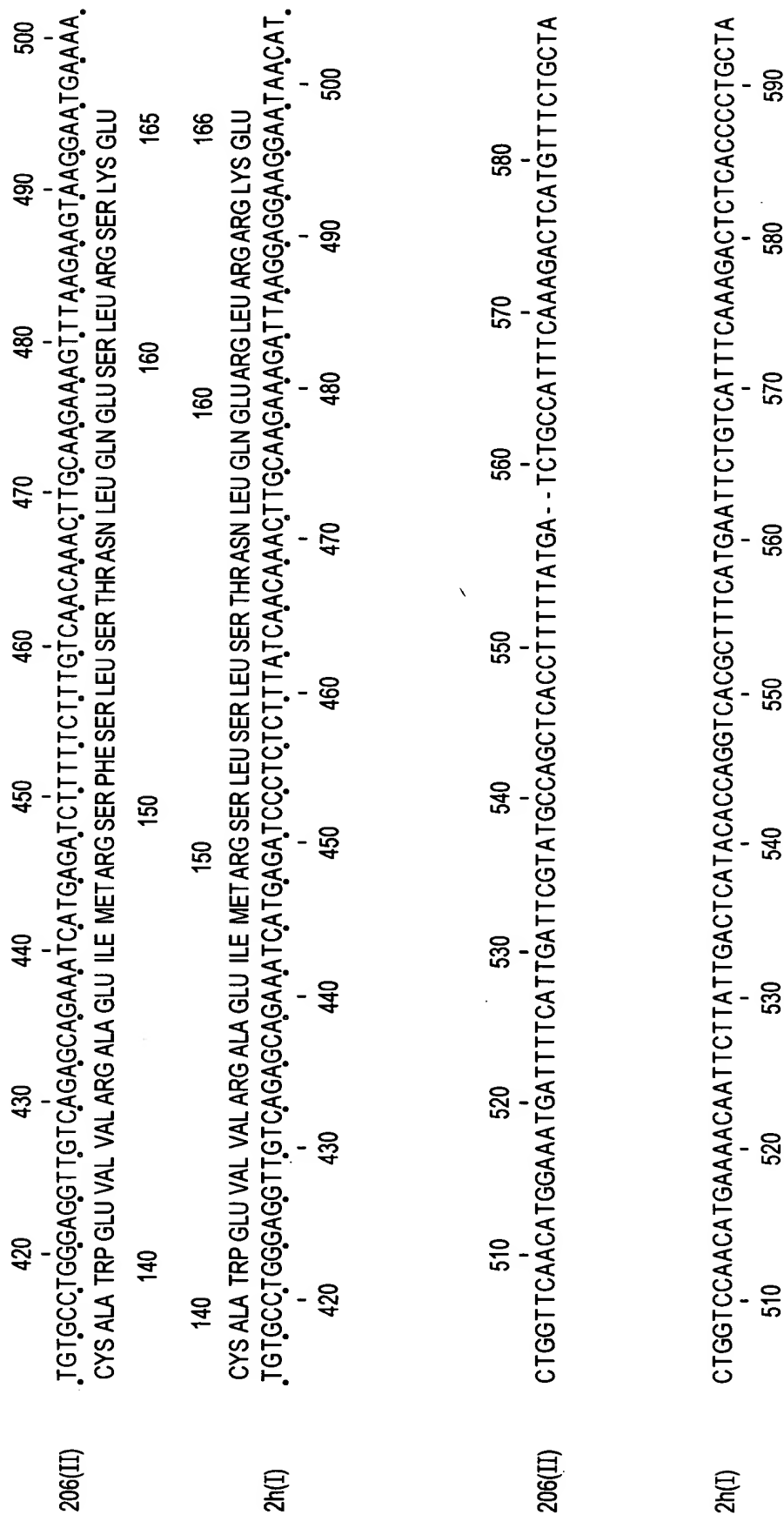


FIG. 15



15/31

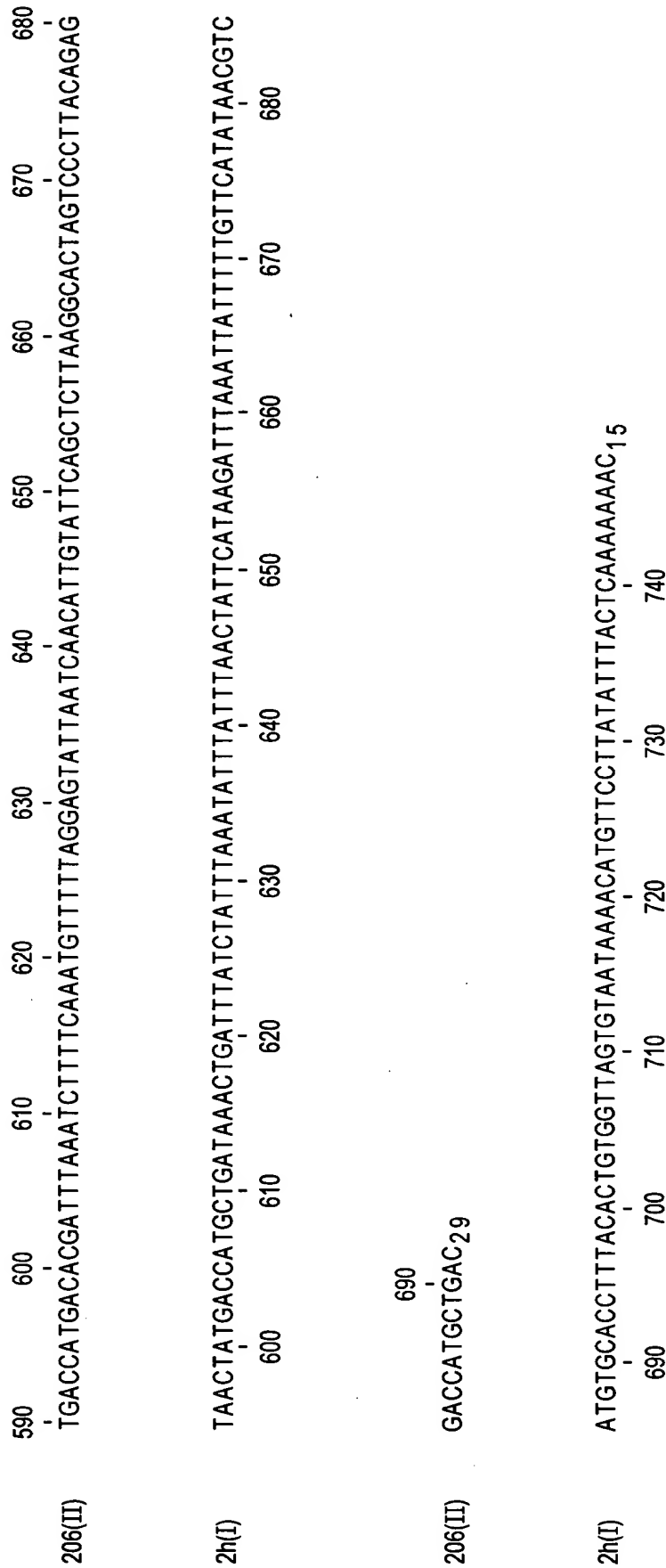


FIG. 16



16 / 31

FIG. 17

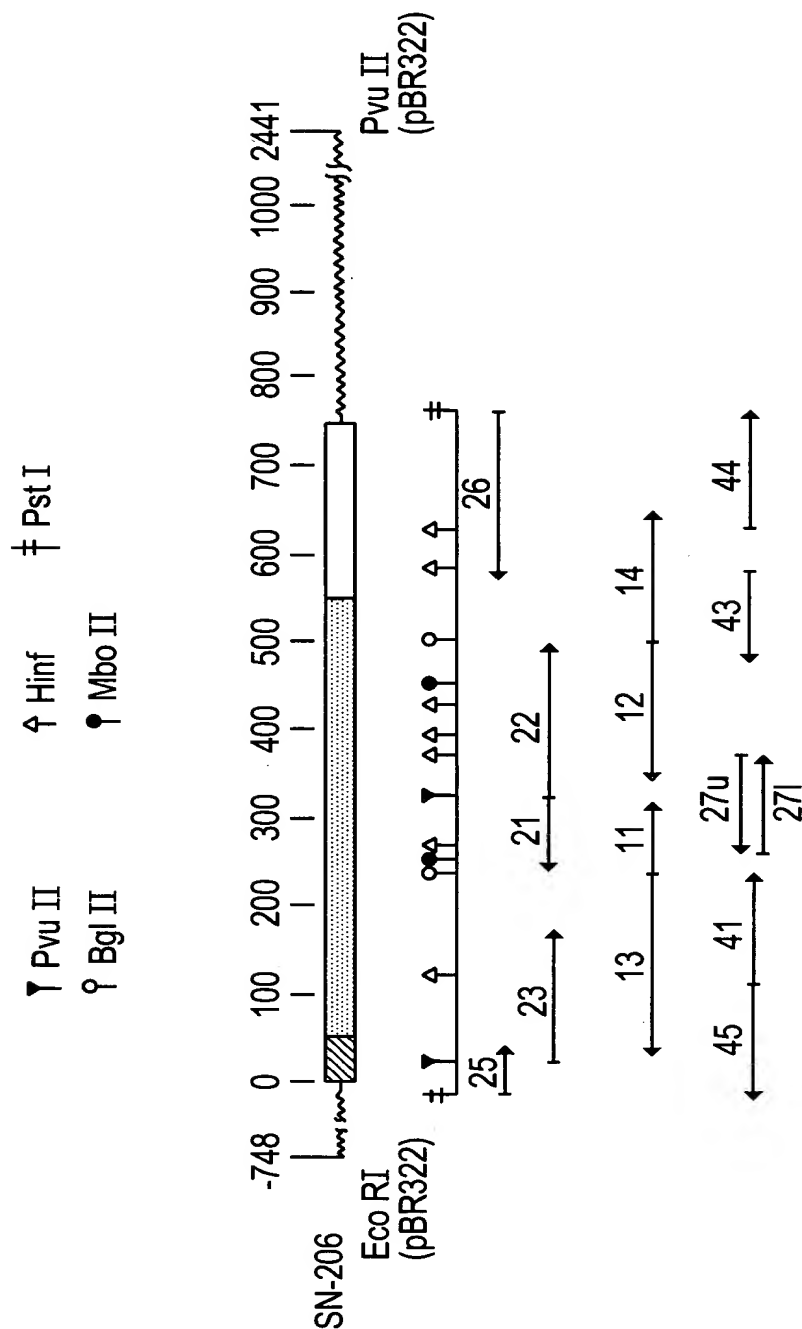
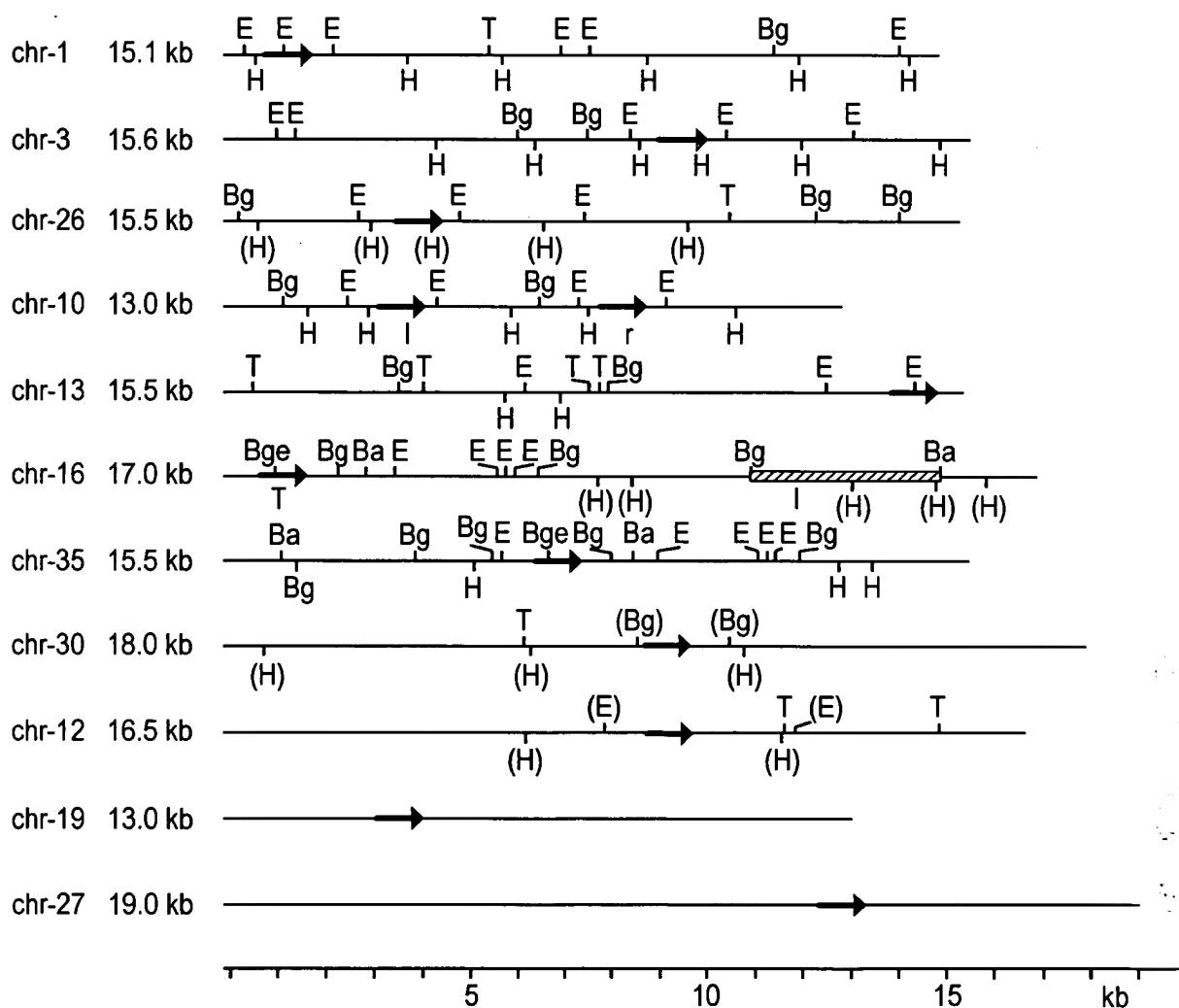




FIG. 18

PARTIAL RESTRICTION MAPS OF CLONED, IFN- α RELATED CHROMOSOMAL DNA SEGMENTS



E: Eco RI, Ba: Bam HI, Bg: Bgl II, Hinc III, T: Tac I

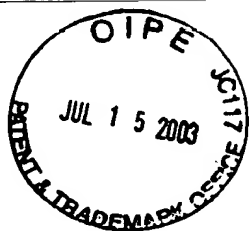
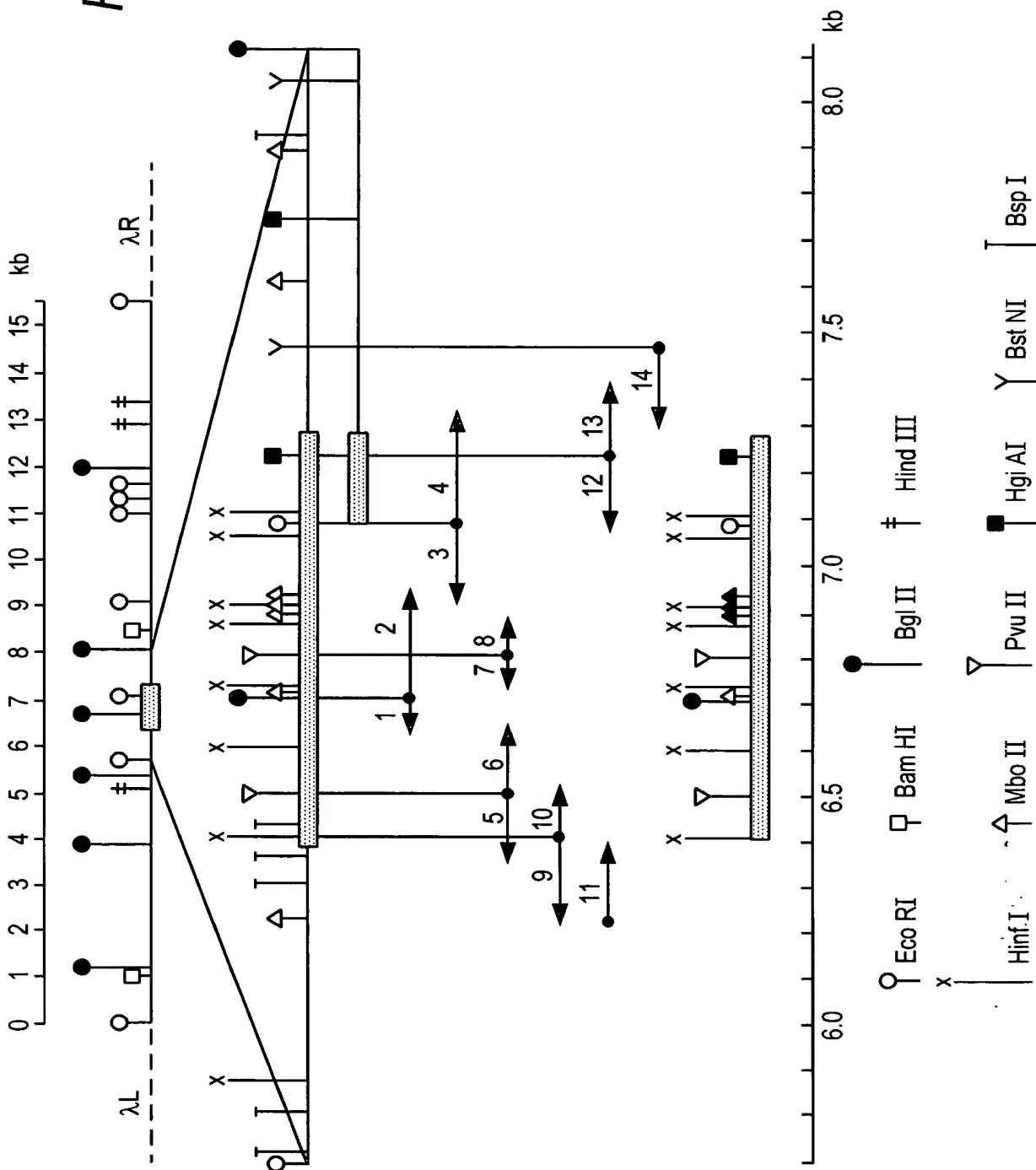
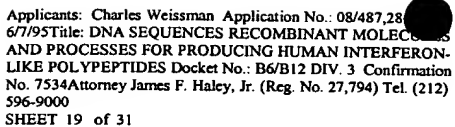


FIG. 19





AAAAACAAAACATTTTGAGAAACACGGCTCTAAACTCATGTAAAGAGTGCATGAAGGAAAGCAAAAACAGAAATG

GAAAGTGGCCAGAGCATTAGAAAGTGGAAATCAGTATGTTCCCTATTTAAGGCATTTGCAGGAAGCAAGGCCTTCAGAGAACCTAGA
 -140 -120 -100 -80 -60
 Bsp I Bsp I

S10
 S1
 +1
 20
 meta/aserprophealaleu/eumetmetval/leu
 -20
 40
 GGGCCAAAGGTTCAGAGTCACCCATCTCAGCAAGCCCAGAGTATCTGCAATATCTACGATGGCCTCGCCCTTTGCTTTACTGATGGTCTCTG
 Hinf
 Bsp I
 Eco RII
 Ava II

40
 valvalleusercyslyssersercysleuglycysaspleuprogluthrhissrleuaspaasnargargthrleumetleuleu
 60
 S20
 1
 10
 100
 120
 GTGGTGCTCAGCTGCAAGTCAAGCTGCTCTCTGGGCTGTGATCTCCCTGAGACCCACAGCCTGGATAACAGGAGGACCTTGATGCTCCTG
 Dde I Pvu II Alu I Mbo I Dde I Eco PI Eco RII Ava II Sfa NI Eco RII
 Alu I

FIG. 20



20 140 180 200 40
ALAGLNMTSERARGILESERPROSERCYSLEUMETASPARGHI SASPPHEGLYPHEPROGLNGLUGLUPHEASPGLYASNGLNPHE
GCACAAATGAGCAGAACTCTCTCCTTCCTCCTGCTGCTGATGGACAGACATGACTTTGGATTTCCCCAGGAGGAGTTTGATGGCAACCCAGTTTC
Hinf EcoRII

50 220 240 260 280 300 70
GLNLYSALAPROALAILESERVALLEUHSGLULEUILEGLNGLNILEPHEASNLEUPHETHRTHRLYSASPSERSERALAALATRPASP
CAGAAGGCTCCAGCCATCTCTGCTCCTCCATGAGCTGATCCAGCAGATCTTCAACCTCTTTACCACAAAAGATTTCATCTGCTGCTTGGGAT
Alu MboI BglII Hinf
EcoP15 MboI MboII

80 320 340 360 380 100
GLUASPLEULEUASPLYSPHECYSTRHGLULEUTYRGLNGLNLEUASNASPLEUGLUALACYSVALMETGLNGLUGLUARGVALGLYGLU
GAGGACCTCCTAGACAAATTCTGCACCGAACTCTACCAGCAGCTGAATGACTTGGAAAGCCTGTGTGATGCAGGAGGAGGGTGGGAGAA
AvaII EcoP15 PvuII SfaNI AluI

FIG. 21

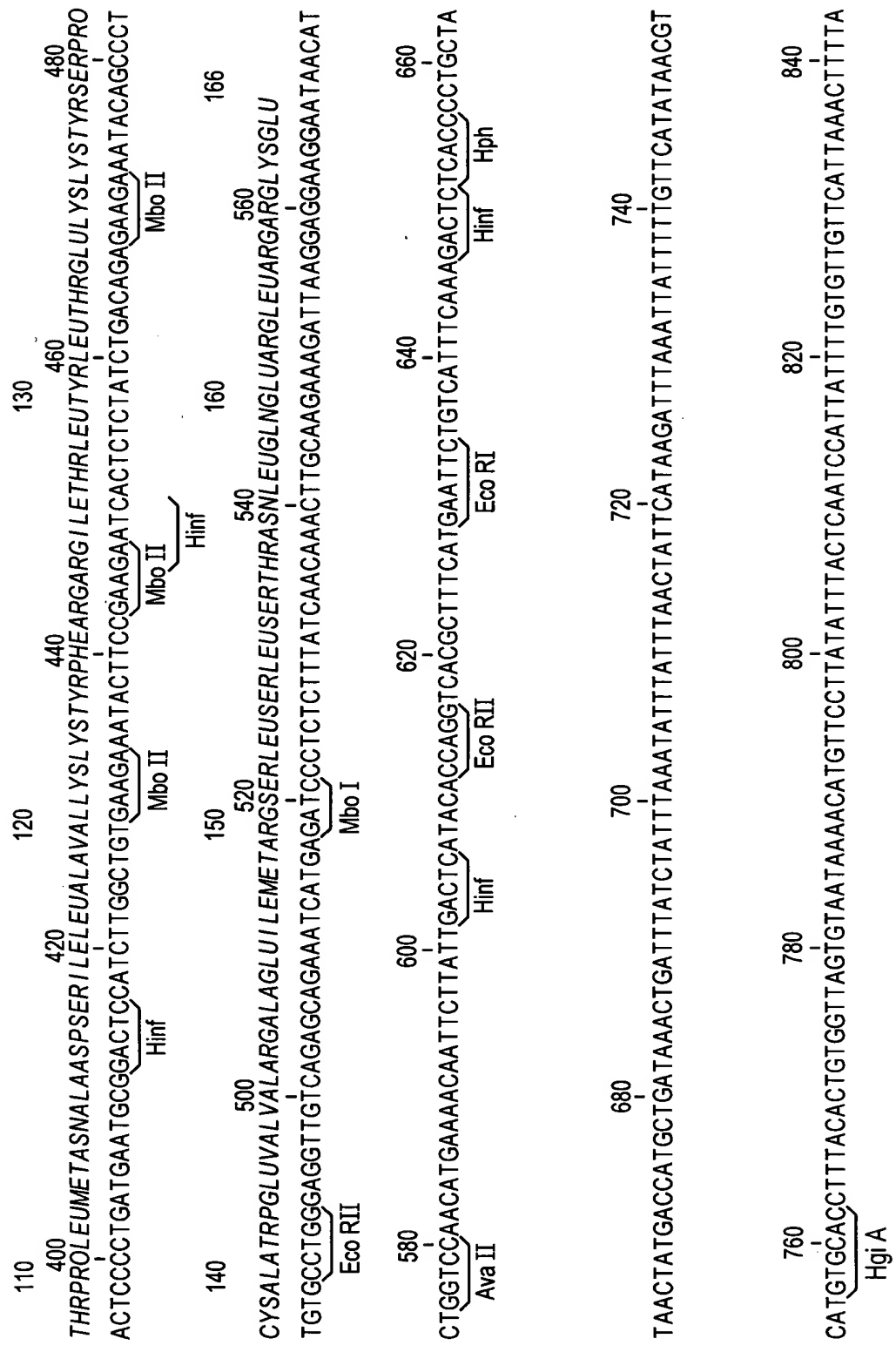


FIG. 22



22 / 31

CTATAGGAACTTCCTGTATGTGTTCATTCTTTAATATGAAATTCCTAGCCCTGACTGTGCAACCTGATTAGAGAAATAAAGGGTATATTTTA
860 920
TTTGCTTATCATTATTATATGTAGA
940 959

FIG. 23



LINKAGE OF IFN- α RELATED GENES

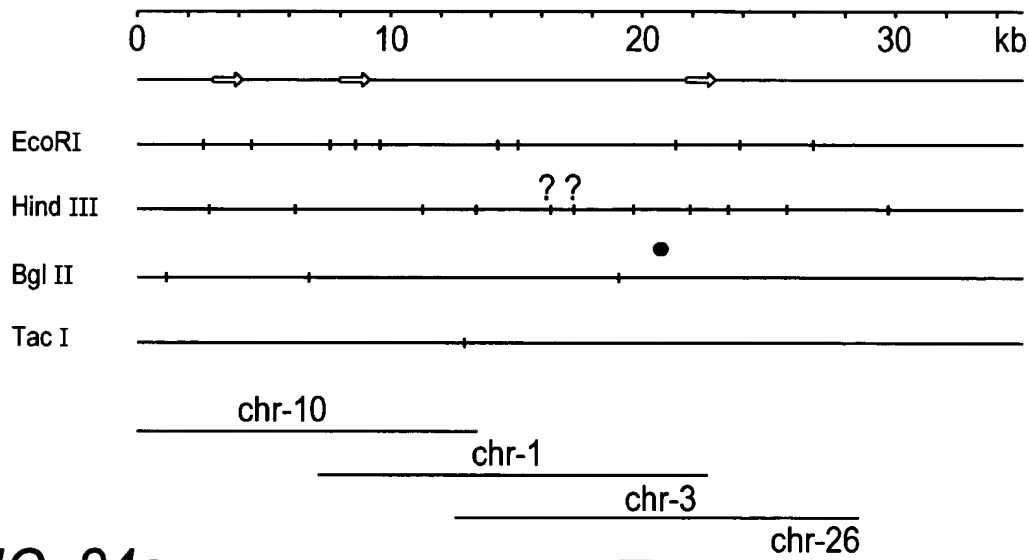


FIG. 24a

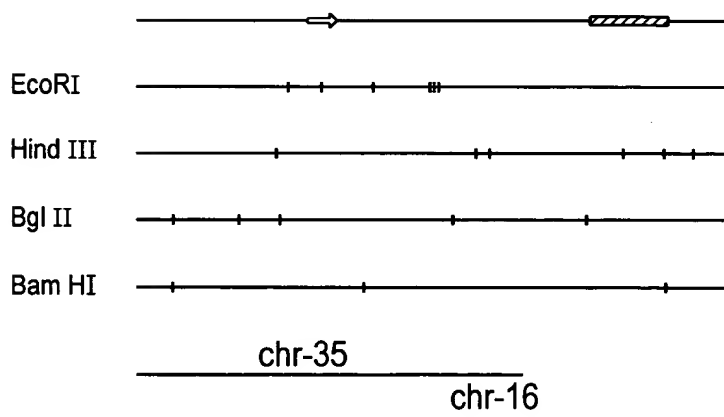


FIG. 24b



24 / 31

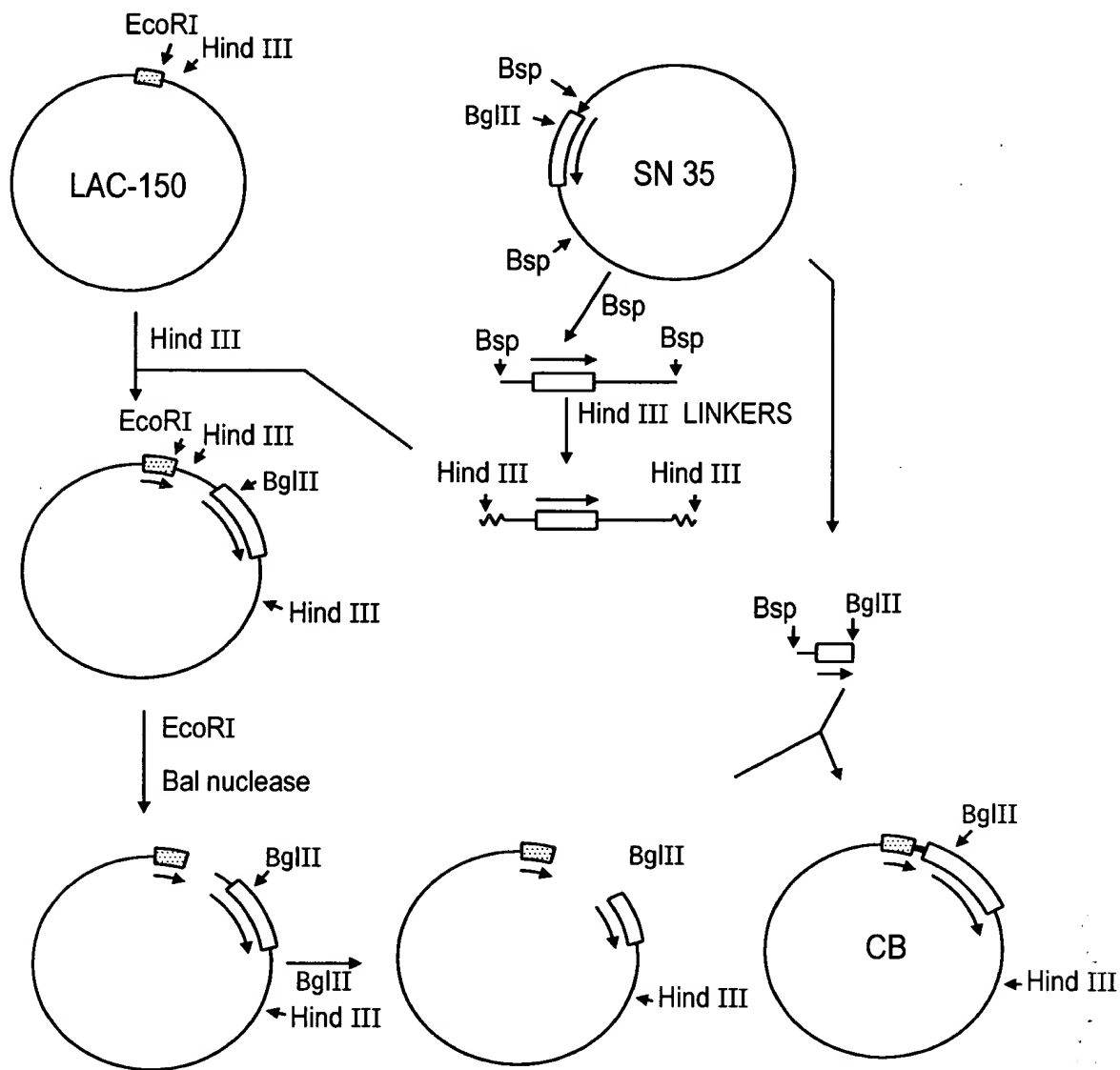


FIG. 25



25 / 31

FIG. 26

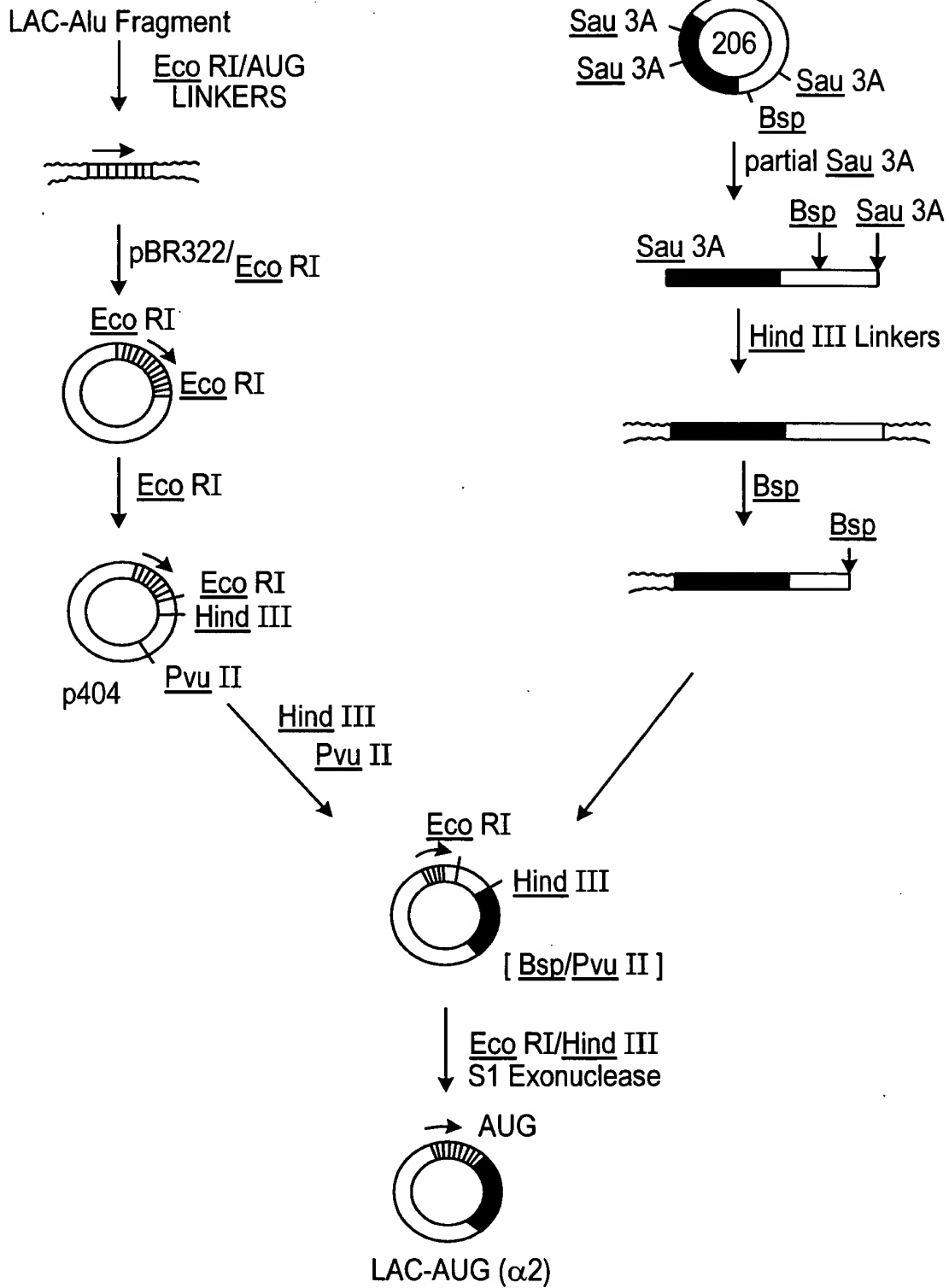




FIG. 27

CONSTRUCTION OF PLASMID LAC-AUG(α -2)

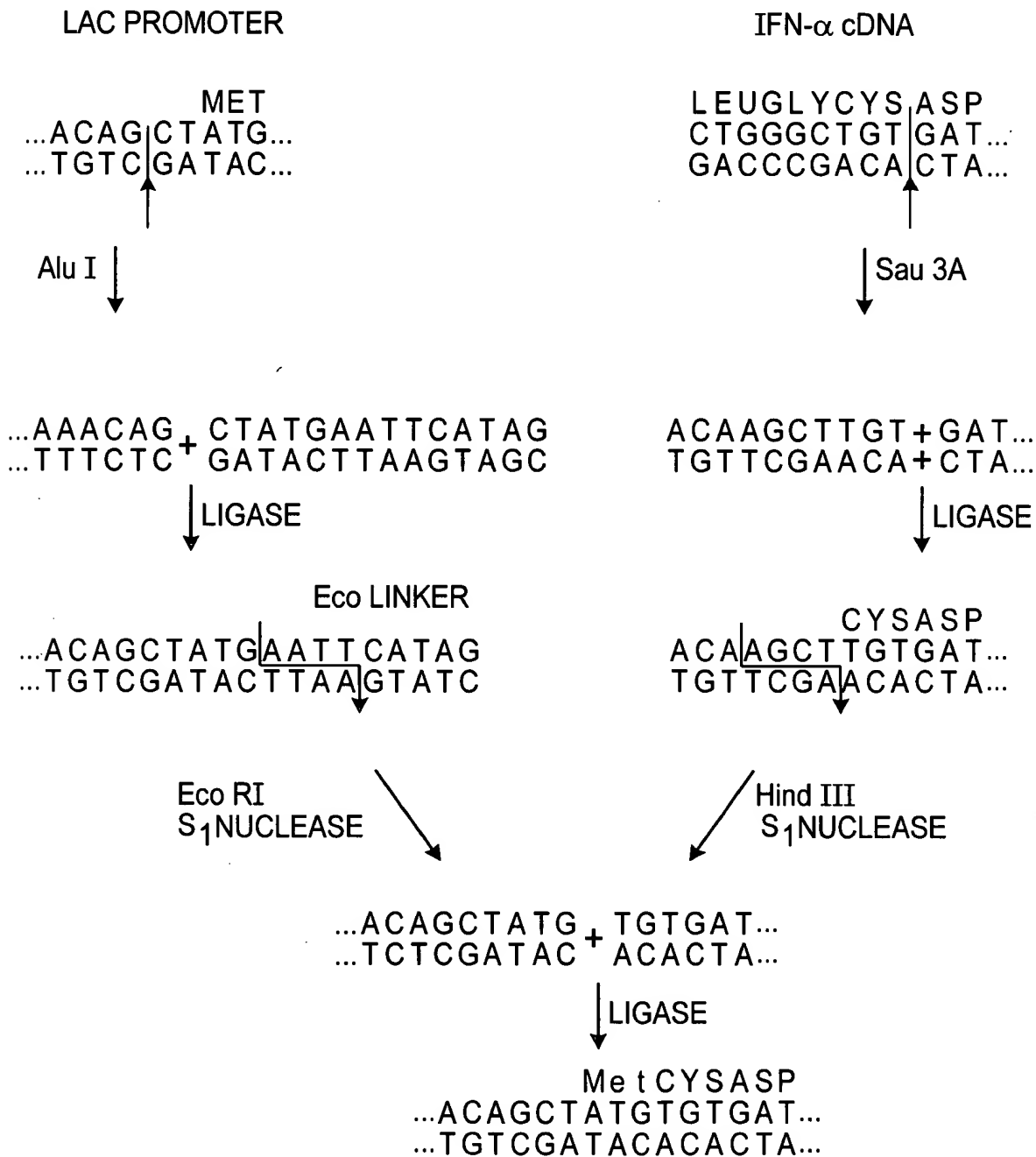
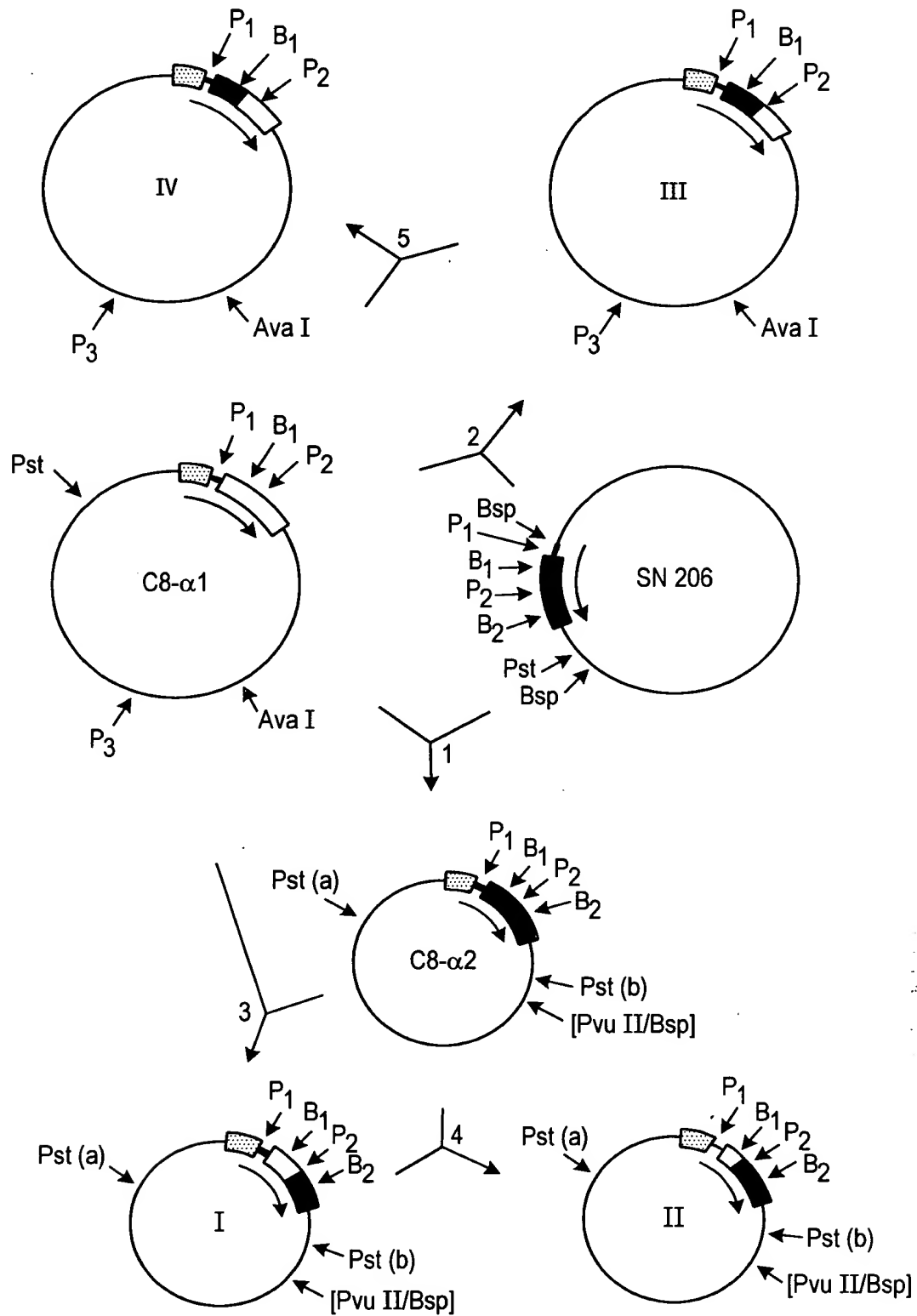




FIG. 28





160 180 200
C₂₄AATGCAAAATAGCTTATATATATGATTATTTCTAGTAAA
AluI

220 240 260 280 300
GTTATTCAACACATCAGTACCTTATGTCACCTGCTGAAAAGAAAAAGTGTGGCAACATCTGGATGAACTACTGCAGCTGATGAAGTTTACAAAATTATTTT
RsaI ChulI PstI AluI PvuII BbsII

320 340 360 380 400
GTCATATAAGCAAAATTCAGCTTATGTCACCTAAGAGAAAAATTTTAAAAAATTATTCATTCATATTTTAGGAGTTTGAATGATTGGATATGTAAT
EcoRI BbrI AluI DdeI EcoRI

420 440 460 480 500
TATATTCATATTATTAATGTGTATCTATATAGATTTTATTTTTCATATGTACTTTTGATACAAAAATTTACATGAACAAATTACACTAAAGTTATTCACACA
EcoRI RsaI EcoRI

520 540 560 580 600
ATATACTTACAAATTAAGTTAATGTCAATAGCTTTTAAACTTAAATTTTAGTTTAGTACCTTTCTGTCATCTTACTTACTTTGAATAAAAAAGAGCA
AluI EcoRI AluI

FIG. 29

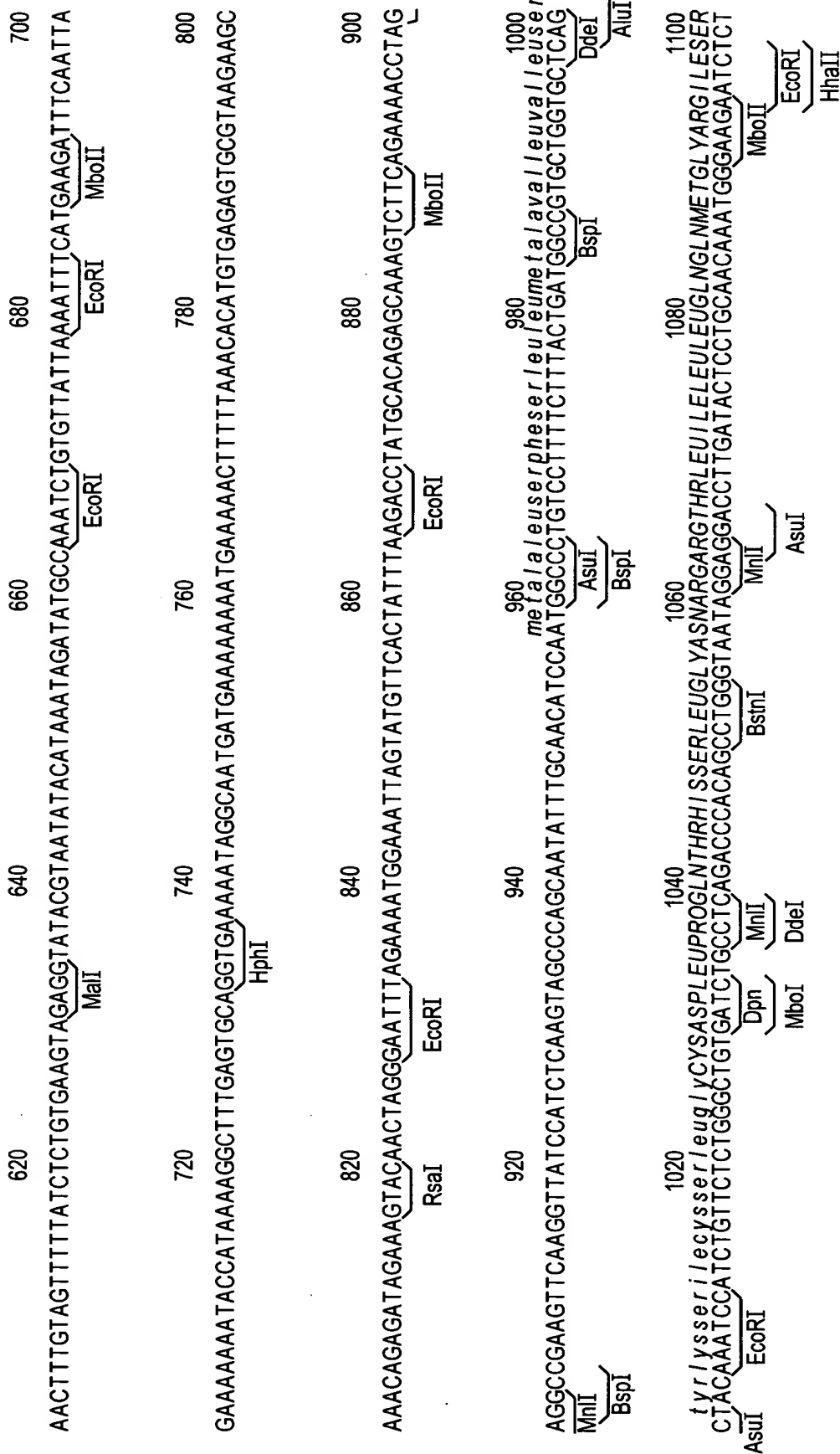


FIG. 30

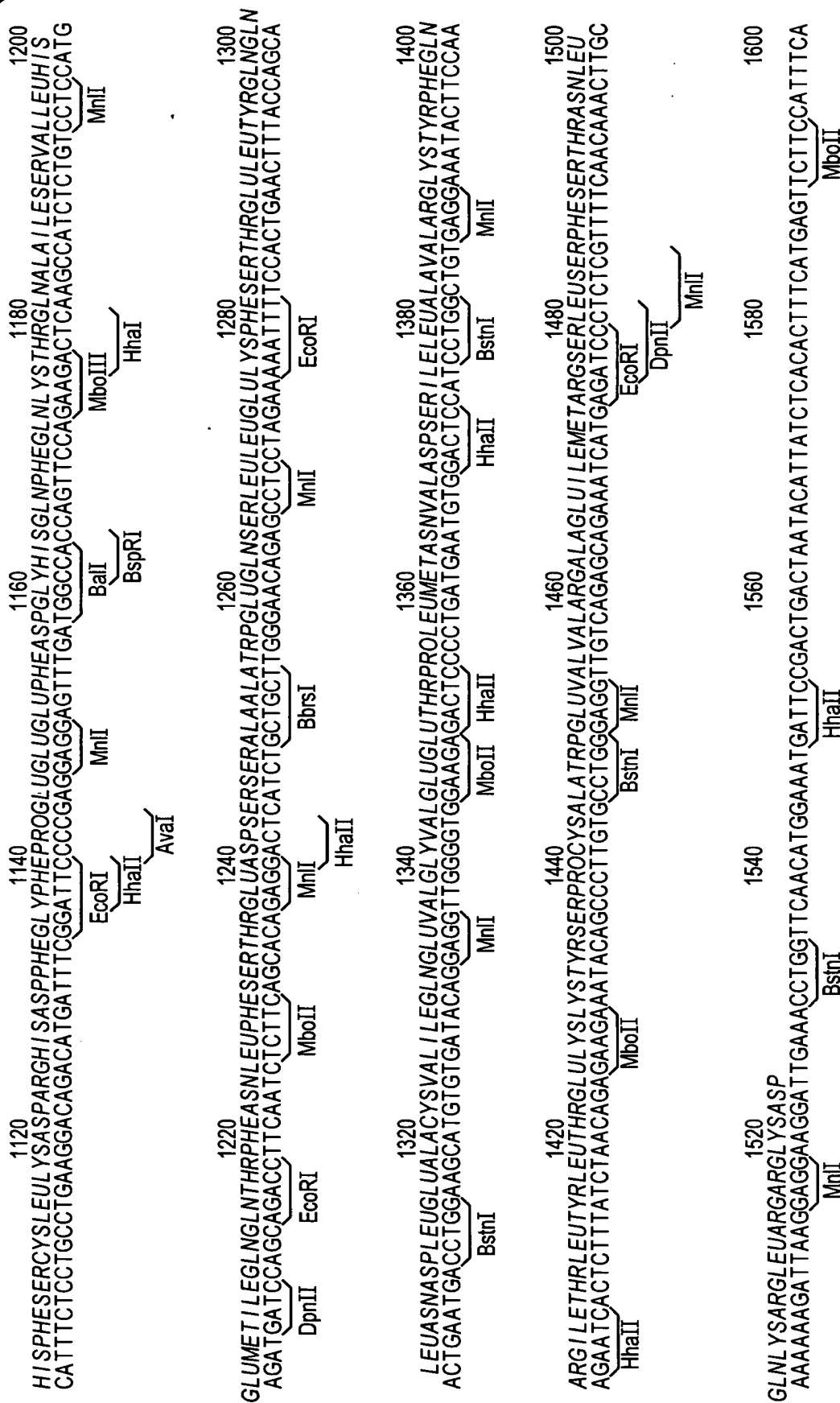


FIG. 31



31/31

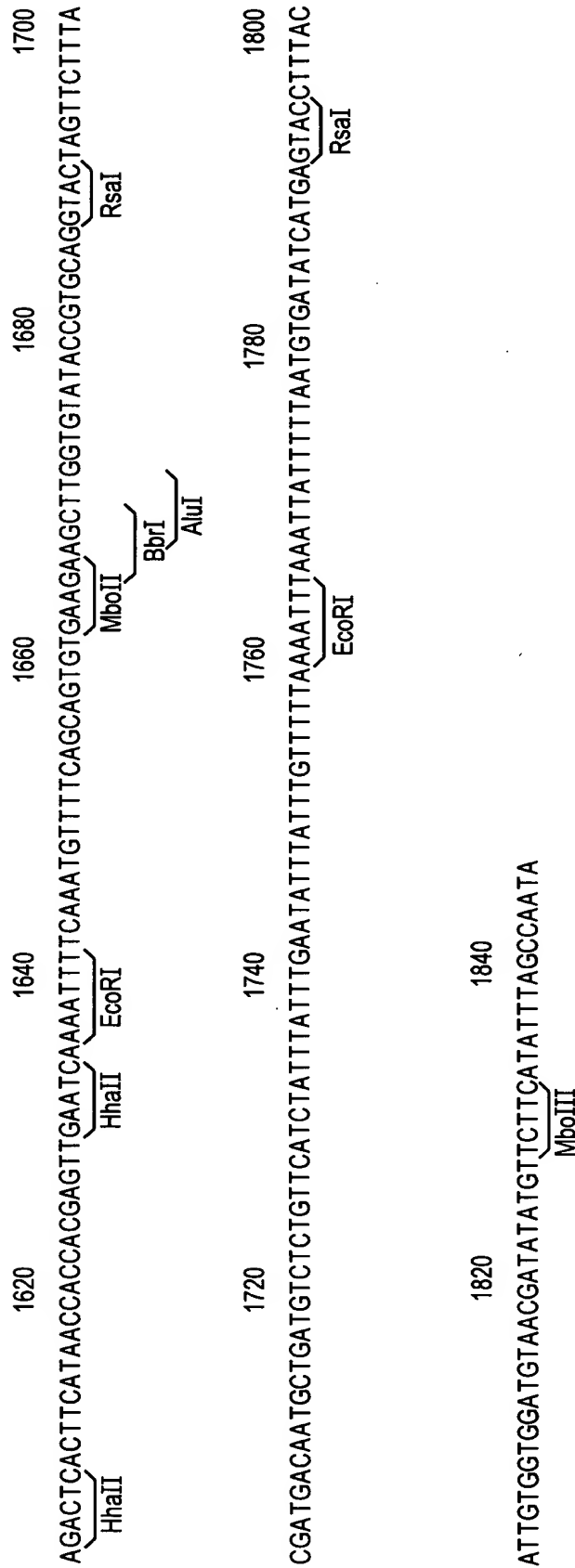


FIG. 32